



Transportation Synthesis Report

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Privatization of Pavement Marking and Traffic Signing Long-Term Costs vs. Benefits

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Transportation Synthesis Reports (TSRs) are brief summaries of currently available information on topics of interest to WisDOT technical staff in highway development, construction and operations. Online and print sources include NCHRP and other TRB programs, AASHTO, the research and practices of other state DOTs, and related academic and industry research.

REQUEST FOR REPORT

As state DOT maintenance organizations face work force shortages, the privatization of some duties becomes attractive and even necessary. Privatization of pavement marking and traffic signing activities also has the advantage of avoiding the initial capital outlay for durable marking equipment. However, to what extent do savings continue over time? The RD&T Program was asked to gather information on this question.

SUMMARY

While many states outsource some or all of their pavement marking and traffic sign work, we found none that rigorously track the cost-benefit initially or over time. In most cases, in fact, states acknowledge it may be more expensive over the course of years to privatize such work, at least in terms of installation and maintenance costs. It appears that the decision to outsource is made more to streamline responsibilities and activities rather than to save costs. See **State Experiences** for summaries of the conversations we had with eight state DOTs (Kansas, Massachusetts, Michigan, Nebraska, New Mexico, Oregon, Virginia and West Virginia). Some published surveys of state outsourcing practices indicate there are cost savings, but little hard data is presented; even less pertains directly to pavement marking and traffic signing. A few relevant research efforts are summarized under **Studies**, including one performed by UW-Madison's Midwest Regional University Transportation Center.

STATE EXPERIENCES

Kansas. Kansas doesn't outsource permanent markings or maintenance, because in-house paint crews are less expensive than private, and because the paint has improved in quality, and is cheaply produced through the state penitentiary system. Markings are contracted out as part of construction or reconstruction jobs. Sign installation remains in-house except on long sections of road. Furthermore, maintenance also is handled in-house, except when crews are overwhelmed in case of problems like tornadoes, etc.

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Massachusetts. According to the signs and markings supervisor, Mass Highway has outsourced most of the pavement marking for many years. Maintenance crews only do latex paint markings, leaving all other types to private contractors. Mass Highway's sign shop services signs in emergencies, but most installations are done as part of construction projects, and big signs are installed by contractors. In both cases, this practice serves to avoid the equipment and personnel costs associated with the duties, a goal since the early 1980s when downsizing maintenance crews became an agency aim.

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Michigan. New signs are installed every 12 to 15 years, all outsourced; contracts are awarded by district offices. Maintenance, specialty sign installation and accident-damaged sign replacements are done in-house. The contracting out essentially helps MDOT deal with a staff too small to handle all the regional work. Fifteen years ago, it may have been cheaper to do in-house for any short road section, but now it is more cost-effective to outsource. Pavement markings follow a similar path. For about 10 years, the work has been outsourced to accommodate significant MDOT downsizing. The \$10 million per year spent on marking, including re-striping 90 percent of the state roads each year, has held steady for several years, and the cost of such work has dropped slightly over the decade. Furthermore, retro-reflectivity has steadily improved under contractors, with acceptable levels maintained throughout the year, even after winter wear.

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Nebraska. The Department of Roads outsources striping. It is cheaper to do the work in house, but a hiring freeze and skeleton personnel crew require contracting such work out. Hard numbers were not available on cost-benefits.

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New Mexico. New Mexico has been outsourcing sign work since the mid 1990s, and pavement marking since about 1998; both choices followed NMSHTD leadership interests in streamlining payroll via privatization. Costs for pavement marking were about \$.048/foot in-house, and about \$.041/foot via outsourcing; these costs have held steady since. Sign work, with manufacture and install contracts, experiences similar savings. While long-line marking will stay privatized, some sign work may be picked up by district sign crews that are reforming, due to problems with contractors failing to rapidly respond to urgent sign needs. In both cases, signs and striping, NMSHTD has had trouble with quality and responsiveness from contractors.

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Oregon. About four years ago, the maintenance department decided it needed to contract out durable, long-line marking, simply because they hadn't the budget—\$250,000 to \$300,000—for necessary equipment, or the flexibility to add staff for the process, if more staff were needed. "It was the only choice," says Doug Tindall, maintenance engineer. He said he cannot assess its cost-benefit value.

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Virginia. These functions have been outsourced for years, per a department philosophy of outsourcing to reduce equipment and payroll expenses, according to planner Marvin Graham. Replacement and repair of signs are also outsourced. Graham speculates that a movement within the department that recognizes the value of an in-house maintenance staff could shift this practice back toward being state-handled. Typically, choices are made from district to district. For construction and resurfacing jobs, markings are almost always part of contract. VDOT usually outsources durables to avoid acquiring necessary equipment. The same is true for thermoplastic and epoxy markings. While durables are considered expensive, some of the other markings may be cheaper due to avoidance of initial investment, but cost is less a concern than saving man-hours. Contracts for markings of long sections of road are considered inexpensive. Small signs are handled in house, large and overheads outsourced. In some cases, small signs will be contracted out if job entails a large number of them. Again, reduced work force requires this practice.

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West Virginia. West Virginia privatized pavement marking about six years ago based on a philosophical leaning toward outsourcing as a means of streamlining staff. Over these years the WVDOT staff is said to have dropped by 50 percent. Quality was another issue, as the process of painting and inspection had become a long one that was often interrupted by seasonal weather changes. Initially the cost was much greater to privatize, but as contractors and paint and equipment manufacturers gained experiences in the market, costs dropped 15 percent each year. Now pavement-marking costs are about five percent greater than when it was done in house, but the quality is much higher and contracts entail maintenance responsibilities by the contractor. Furthermore, outsourcing has allowed maintenance crews to put more energy into sign installation and maintenance, with the result that signs throughout the state are maintained in significantly better condition than before privatization of pavement marking.

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STUDIES

Outsourcing of State Highway Facilities and Services, NCHRP Synthesis 246, David K. Witheford, Transportation Research Board, 1997.

- This report is based on a literature review and survey of current state DOT practices in outsourcing highway activities.
- “Most states are feeling the impacts of a political and public climate that mandates a reduction in the size of many if not all state agency employment rolls...” (p. 32)
- “The patterns in outsourcing seem to be as variable among states as are the characteristics of the states themselves. It has not been possible to point to many consistencies among the states in the range of activities contracted, their dollar volumes, or the percentage of total work that is being outsourced.” (p. 32)
- “The decisions [to outsource or not] in many cases are not ‘cost-driven,’ thus cost-effectiveness analyses of whether to perform work in-house or to outsource it do not appear to be widely used.”
- The study cites a previous (1986) report, **NCHRP Synthesis 125, *Maintenance Activities Accomplished by Contract***, which reported that 16 of 27 states had found contracting to be cost-effective, although it “did not offer evidence of the analyses that might have been made to support those conclusions.”
- Seventeen of 34 states responding indicated they had carried out “cost-effectiveness or other analyses...to compare the success of outsourcing with in-house performance of the same tasks.” (p.21) “Yet only five states replied that materials on the studies could be provided.”

(Note: **NCHRP Project 20-07, Task 158, *Survey of State DOT Practice: Private Outsourcing***, was recently completed and will be published as **NCHRP Synthesis 313** in late May 2003. It will update Synthesis 246.)

***Contracting for Road and Highway Maintenance*, Segal, Geoffrey F., Adrian T. Moore, and Samuel McCarthy. March 2003.** See <http://www.rppi.org/htg21.pdf>. The Reason Public Policy Institute Web site has a relevant paper on outsourcing.

- Savings seen overall in Australia, New Zealand, various U.S. states; see pp. 6-12.
- Pavement markings and signs not a focus of study, though it did note the markings being contracted out in Virginia.
- Specific claims about savings on markings not made. Cost benefit may be more acute for other maintenance activities.

***Evaluation of Transportation Organization Outsourcing: Decision Making Criteria for Outsourcing Opportunities*, RJ Eger, III, DA Knudson, J Marlowe, L Ogard; Midwest Regional University Transportation Center, Oct. 31, 2002.** See <http://www.mrutc.org/research/0103/report0103.pdf>.

- Pavement markings not explored, but Nebraska (p. 40) and Pennsylvania (p. 42) survey responses offer opinion that these should be outsourced by states.
- Main motivations for outsourcing are strategic; cost is not a primary factor in such decisions. (p. 54ff)
- Concerns about outsourcing include loss of control, quality concerns, loss of organizational expertise (p. 54ff).

***Assessing Outsourcing Potential in a State DOT*, Chester G. Wilmot, Donald R. Deis, Rong Xu, TRB 2003 Annual Meeting CD-ROM.**

- The objective of the research reported in this study was to produce a procedure that would assist the Louisiana Department of Transportation and Development in assessing the outsourcing potential of activities and functions in the department.
- The end product of this project was a PC-based software tool for evaluating qualitative and cost aspects of contracting out services.
- The model, using hypothetical data, was applied to three activities to demonstrate its use—maintenance of rest areas, highway markers, and highway striping.

***The Long-Term Impact And Cost-Effectiveness Of Outsourcing 1999*, J.L. Johnson, L.D. Ponthieu, Project Summary Report 1829-S, Transportation Research Center, University of North Texas.**

- Evaluates the long-term impact and cost-effectiveness of outsourcing certain Texas Department of Transportation (TxDOT) functions.
- Uses a survey tool to get opinions on outsourcing from the 25 district offices and the central office.
- Finds that direct cost savings associated with outsourcing are small, but “when indirect transaction costs are considered, significant cost savings are likely in noncore competency areas over time.” (p.13)
- Finds that “A true cost-benefit analysis of functions is difficult when deciding whether to outsource a function or perform it in-house.” (p.14)
- The findings of the study suggest that TxDOT should increase outsourcing of the Base-in-Place Repair and Paint-and-Bead Striping functions. (p.14)